

CLAIMS

1. An ionization method using cluster-ion impact,
comprising steps of:

generating charged droplets of a volatile liquid
5 in a state in which the droplets are cooled so as to
suppress vaporization thereof;

introducing the charged droplets generated into an
evacuated chamber; and

forming an electric field in the evacuated chamber
10 and accelerating the charged droplets by the electric
field to cause them to bombard a sample, thereby
desorbing and ionizing the sample.

2. An ionization apparatus using cluster-ion impact,
comprising:

15 an accelerator having an evacuated acceleration
chamber, in the interior of which accelerating
electrodes and a sample table are disposed, provided
outside of an ion introduction port of a mass analyzer
and communicating with the interior of the mass
20 analyzer through the ion introduction port; and

a charged-droplet generating device, which has a
charged-droplet generating chamber that communicates
with said evacuated acceleration chamber through a
droplet introduction port of said evacuated
25 acceleration chamber, for generating charged droplets
of a volatile liquid in the charged-droplet generating
chamber in a state in which the droplets are cooled so

as to suppress vaporization thereof;

wherein the charged droplets generated by said charged-droplet generating device are introduced from said charged-droplet generating chamber to said
5 evacuated acceleration chamber through said droplet introduction port, the droplets are accelerated by said accelerating electrodes, to which a high voltage has been applied, and bombard a sample on the sample table, and ions of the sample desorbed and ionized thereby are
10 introduced to the mass analyzer through said ion introduction port.